

REMARKS

Claims 1-31 have been examined. Upon entry of this amendment, claims 1, 15, 20, 21, 24, 27, 29 and 31 have been amended, and no new matter is added thereby. Claims 1-31 remain pending. Reconsideration of the present application as amended and in view of these remarks is respectfully requested.

Claims 15-19, 21 and 23 stand rejected under 35 U.S.C. 102(3) as being anticipated by Dahley et al. (U.S. Patent 6,501,463). The Examiner has indicated that Dahley et al. teaches the claimed method of independent claim 15 (and its dependent claims 16-19) and computer program product of independent claim 21 (and its dependent claim 23) by citing various portions of Dahley et al. cols. 5-10.

With the present invention, both independent claims 15 and 21 recite limitations of defining a reconfigurable input button and a location of said input button corresponding to a portion of said tactile sensor, and defining for said input button a first function and a second function. Each of said first and second functions of the same input button are defined by (a) an existence of a touch on the tactile sensor, (b) a defined first (for said first function) or second (for said second function) level of pressure of said touch on the tactile sensor, and (c) said location of said touch within said portion on the tactile sensor. Further, said first function of said input button is selectable based on said first defined level of pressure and said second function of the same input button is selectable based on said second defined level of pressure. That is, the same input button associated with said location of said input button has at least two functions that are defined for same input button, with each function selectable based on the touch having a different pressure level associated with such function.

In contrast, Dahley et al. teach and suggest only that a particular input button is defined for a particular function, not multiple functions dependent on various pressure levels of a touch to the location of the touch within said portion on the tactile sensor that is associated with said input button. For example, the imprinted keypad 16 on writing surface 14 taught by Dahley et al. merely can have a touch at a defined position assigned to particular function of that particular button on the keypad (see col. 8, lines 32-45). Dahley does not teach or suggest that different pressure levels of the touch at the location

of the same input button can have different functions associated therewith, as claimed with the present invention in independent claims 15 and 21. Accordingly, Applicants assert that claims 15 and 21 and their dependent claims 16-20 and 22-23 are patentable over Dahley et al. for at least the above reasons.

Claims 1-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dahley et al. in view of Moss (U.S. Patent No. 4,818,048). The Examiner has conceded that Dahley et al. fails to teach a control panel apparatus a tactile sensor and having reconfigurable input buttons. Moss is cited for teaching input buttons of a tactile sensor being reconfigurable by a user.

The present invention as recited in independent claim 1 provides a control panel apparatus that includes a tactile sensor; a plurality of input buttons reconfigurable by a user, where there is a representation of said plurality of input buttons placed on said tactile sensor; and electronics, coupled to said tactile sensor, for measuring a location of a touch to an input button on said tactile sensor and an existence of and a level of pressure of said touch and for storing a plurality of functions, each of said plurality of functions associated with a corresponding one of said plurality of input buttons and each of said plurality of functions associated with a different level of pressure of said touch. The touch on one of said plurality of input buttons on said tactile sensor causes said electronics to measure said location and said level of pressure of said touch and said touch causes an occurrence of one of said plurality of functions associated with said location and said level of said pressure of said touch.

Dahley et al. fail to teach or suggest that a touch on one of a plurality of reconfigurable input buttons on the tactile sensor has a plurality of functions associated therewith and where said touch causes an occurrence of one of said plurality of functions associated with said location and a different level of said pressure of said touch for said one of the plurality of reconfigurable input buttons. Moss further also fails to teach or suggest that a touch on a particular reconfigurable input button has different functions associated therewith where a different level of pressure of said touch on said tactile sensor causes a selected function associated with that pressure level to occur. In fact, Moss does not appear to teach a tactile sensor where a pressure level of a touch onto the tactile sensor in the region of the reconfigurable input button causes an assigned function

to occur. Rather, Moss merely teaches a tactile control panel 13, which has a display mechanism of holographic image input buttons on the windshield of a car, and a touch of a defined pressure level onto the control panel input button (either panel switch 31, 32, or 33 which are merely "on" or "off" according to col. 2, lines 50-53) does not cause a certain function associated with that defined pressure level to occur. Also, Moss does not teach that a representation of the plurality of input buttons is placed on the tactile sensor, as the holographic display is never "placed" on the tactile control panel 13.

There does not appear to be any suggestion to combine the teachings of Moss and Dahley et al. in either cited reference that would result in the claimed invention. Moreover, even combining the teachings of Moss and Dahley would result in a single function, not dependent on a different pressure level to distinguish from another function, associated with an input button of a tactile sensor that would have a holographic display. No pressure-dependent function of a particular reconfigurable input button of a tactile sensor would result from such combination, except possibly with impermissible hindsight. Therefore, independent claim 1 and its dependent claims 2-14 are believed to be patentable over Dahley et al. in view of Moss for at least the above reasons.

Claims 20, 22 and 24-26 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dahley et al. in view of Brisebois (U.S. Patent No. 6,369,803).

Independent claim 24 provides a system for controlling devices in an industrial or harsh environment. The system includes an operating control panel having a foam tactile sensor; a replaceable representation of input buttons on said foam tactile sensor; electronics; and an external device coupled to the operator control panel. The electronics are capable of measuring a pressure level and a location from a touch on said representation of input buttons on said foam tactile sensor, processing said pressure level and said location, and outputting a signal that causes a function associated with said pressure level and said location. The input buttons and said function associated with said pressure level and said location are reconfigurable by a user of said operating control panel. The external device is for receiving said signal and performing said function.

Independent claim 15 upon which claims 20 and 22 depend also recites limitations for reconfigurable input buttons.

Neither Dahley et al. nor Brisebois teaches a system having a foam tactile sensor, a replaceable representation of input buttons on the foam tactile sensor, and electronics as claimed where the input buttons and the function associated with the pressure level and location are reconfigurable by a user of the operating control panel. Dahley et al. fail to teach or suggest a replaceable representation of input buttons, where the input buttons and the function associated with the pressure level and location are user reconfigurable. Moreover, Brisebois teaches away from having a template over input buttons (col. 1, line 57 to col. 2, line 4), and the input buttons are not reconfigurable but are fixed in selected locations that are determined by the fixed locations of upper contacts 220, 230 and body contacts 240, 250 of each button. Accordingly, Applicants assert that independent claim 24 and its dependent claims 25-26, as well as independent claim 15 and its dependent claims 20 and 22 are patentable over Dahley et al. in view of Brisebois for at least the above reasons.

Claims 27-31 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Dahley et al. in view of Moss and Sato (U.S. Patent No. 4,955,051).

Independent claim 27 provides a control panel apparatus having reconfigurable input buttons. The apparatus includes a tactile sensor; a plurality of input buttons reconfigurable by a user, a representation of said plurality of input buttons placed on said tactile sensor; and electronics, coupled to said tactile sensor, for measuring a location of a touch to an input button and for storing a plurality of functions, each of said plurality of functions associated with a corresponding one of said plurality of input buttons. A touch on one of said plurality of input buttons causes said electronics to measure said location of said touch and said touch causes an occurrence of one of said plurality of functions associated with said location of said touch; and at least one of the number, spatial relation, shapes, sizes, functions, orientations and/or locations of said plurality of input buttons can be reconfigured by the user.

Independent claim 29 provides a method of configuring an operating control device having a tactile sensor, where the method includes the steps of defining a plurality of input buttons and a plurality of corresponding locations of said input buttons corresponding to portions of said tactile sensor; defining a first set of functions of said plurality of input buttons, said first set of functions triggered by a touch on said tactile

sensor at portions corresponding to said plurality of corresponding locations of said input buttons to form a first configuration; generating a first representation of said plurality of input buttons for placement over the tactile sensor within said operating control device; and loading said first configuration into said operating control device to enable said operating control device to determine an appropriate output dependent on a location of said touch on said first representation on said tactile sensor; changing said first configuration to establish a second configuration, wherein said second configuration differs from said first configuration by at least one of the number, spatial relation, shapes, sizes, functions, orientations and/or locations of said plurality of input buttons being reconfigured by the user; and loading said second configuration into said operating control device to enable said operating control device to operate according to said second configuration.

Independent claim 31 provides a computer program product for configuring an operator control panel having a tactile sensor. The computer program product includes computer code for defining an input button and a location of said input button corresponding to a portion of said tactile sensor; computer code for defining at least one of a function, size, orientation, location, spatial relation, and/or shape of said input button to form a first configuration; computer code for altering at least one of said function, size, orientation, location, spatial relation, and/or shape of said input button from said first configuration to form a second configuration; and a computer-readable medium for storing said computer codes.

Each of independent claims 27, 29 and 31 recites limitations for defining and then altering or reconfiguring by a user of at least one of the functions and at least one of the number, spatial relation, shapes, sizes, orientations and/or locations of a plurality of input buttons.

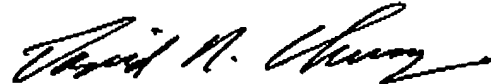
Applicants note that in the rejection of claims 1-14, discussed above, the Examiner had conceded that Dahley et al. fails to teach a control panel apparatus a tactile sensor and having reconfigurable input buttons and then cited Moss for allegedly teaching input buttons of a tactile sensor being reconfigurable by a user. In the rejection of claims 27-31, the Examiner again cites Dahley et al. and Moss but further cites Sato (U.S. Patent 4,955,051) for the teaching of spatial relationship between two buttons.

As already mentioned above and reiterated here for emphasis, Dahley et al. and Moss (and also Sato) fail to teach or suggest a plurality of input buttons that are reconfigurable by a user to change at least one of the functions and at least one of the number, spatial relation, shapes, sizes, orientations and/or locations of a plurality of input buttons. The keypad 16 of Dahley et al. can be set to have multiple functions (e.g., as up, down, left, right, #, * or alternatively 0, 1, 2...9 as discussed in col. 8, lines 35-42). However, Dahley fails to disclose or suggest that the keypad 16 can be reconfigured by the user to change not only the function but also at least one of the number, spatial relation, shapes, sizes, orientations and/or locations of the plurality of input buttons. The keypad 16 is imprinted or fixed (e.g., silk-screened) onto the writing surface 14 of the whiteboard of Dahley, and the changing by the user of the location of the keypad buttons, their shapes, sizes, orientations, number and/or spatial relation is not within the teachings of Dahley. Further, Moss merely teaches a fixed mechanical button tactile control panel 13, which has a display mechanism of holographic image input buttons on the windshield of a car, and the user cannot reconfigure the location, shapes, sizes, orientations, number and/or spatial relation of a particular control panel input button (panel switch 31, 32, or 33 which are merely "on" or "off" according to col. 2, lines 50-53). The Examiner's cited passage of Sato (col. 5, line 45 to col. 6, line 5) merely teaches fixed push buttons on a telephone apparatus which has a spatial relation between the fixed push buttons. Applicants do not believe that Sato teaches any changing of the spatial relation between the push buttons, as these buttons are mechanically fixed. Thus, the teachings of Dahley et al., Moss and Sato even if combined do not teach or suggest the claimed invention as recited in claims 27, 29 and 31. Independent claims 27, 29 and 31 and their dependent claims are therefore believed to be patentable over Dahley et al. in view of Moss and Sato.

CONCLUSION

For all of the above reasons, Applicants respectfully submit that the application is in condition for allowance, which allowance is earnestly solicited.

Respectfully submitted,



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